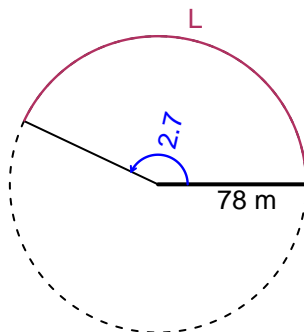# Trig Final (Practice v5)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 2.7 radians. The radius is 78 meters. How long is the arc in meters?
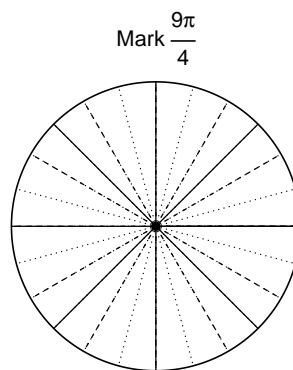

Question 2

Consider angles $\frac{-7\pi}{3}$ and $\frac{9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-7\pi}{3}\right)$ and $\cos\left(\frac{9\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-7\pi}{3}$

Find sin(−7π/3)

Mark $\dfrac{9\pi}{4}$
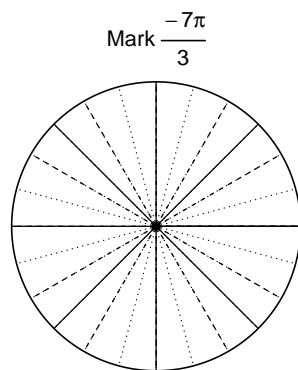
Find cos(9π/4)

Question 3

If $\cos(\theta) = \frac{-48}{73}$, and θ is in quadrant II, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 7.51$ meters, a frequency of 5.61 Hz, and an amplitude of 2.66 meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).